

Non-Construction Alternatives

**Olympic Peninsula & Lower Valley
Assessment, Analysis, & Findings**

June Roundtable Refresher

Plan:

- **Transfer knowledge from E3 to BPA**
- **Learning by doing**
- **Assess 3 proposed transmission construction projects:**
 - **Olympic Peninsula**
 - **McNary - Brownlee**
 - **Lower Valley**

McNary - Brownlee

- This project was load service driven. As part of the NCA analysis, the area forecast was evaluated to determine where load growth was expected, and when the system transmission capacity would be reached.
- The review of the area loads revealed that the local load growth did not develop as indicated in previous forecasts. An updated forecast determined that the transmission project would not be needed within the next few years.

Curiosities

- **Common**
 - Load forecast uncertainties acceptable for construction, are insufficient for alternatives.
 - Actual project/measure costs may vary significantly from planning estimates - “your mileage may vary”
- **Olympic Peninsula**
 - Major uncertainties about the viability of certain industries present potential stranded investment risk for construction that could be mitigated by alternatives.
- **Lower Valley**
 - High likelihood of alternate fuels open the way for many solutions

Olympic Peninsula Findings

Findings	Cost-Effective (TRC)	Annual MW	What We Can Get In 3 yrs
DG Internal-combustion	Yes Up to 500 hrs*	NA	20 MW Existing
DG	Yes	Unk	Unk
Demand Response**	No	Unk	Unk
Direct Load Control	No	Unk	Unk
Energy Efficiency	30 out of 802	20MW	60 MW
Renewables***	No	Unk	Unk
Total		20 MW	80 MW

* Limited by emission regulation

** 4 contracts under review

*** "Plant factor" and intermittency make unattractive

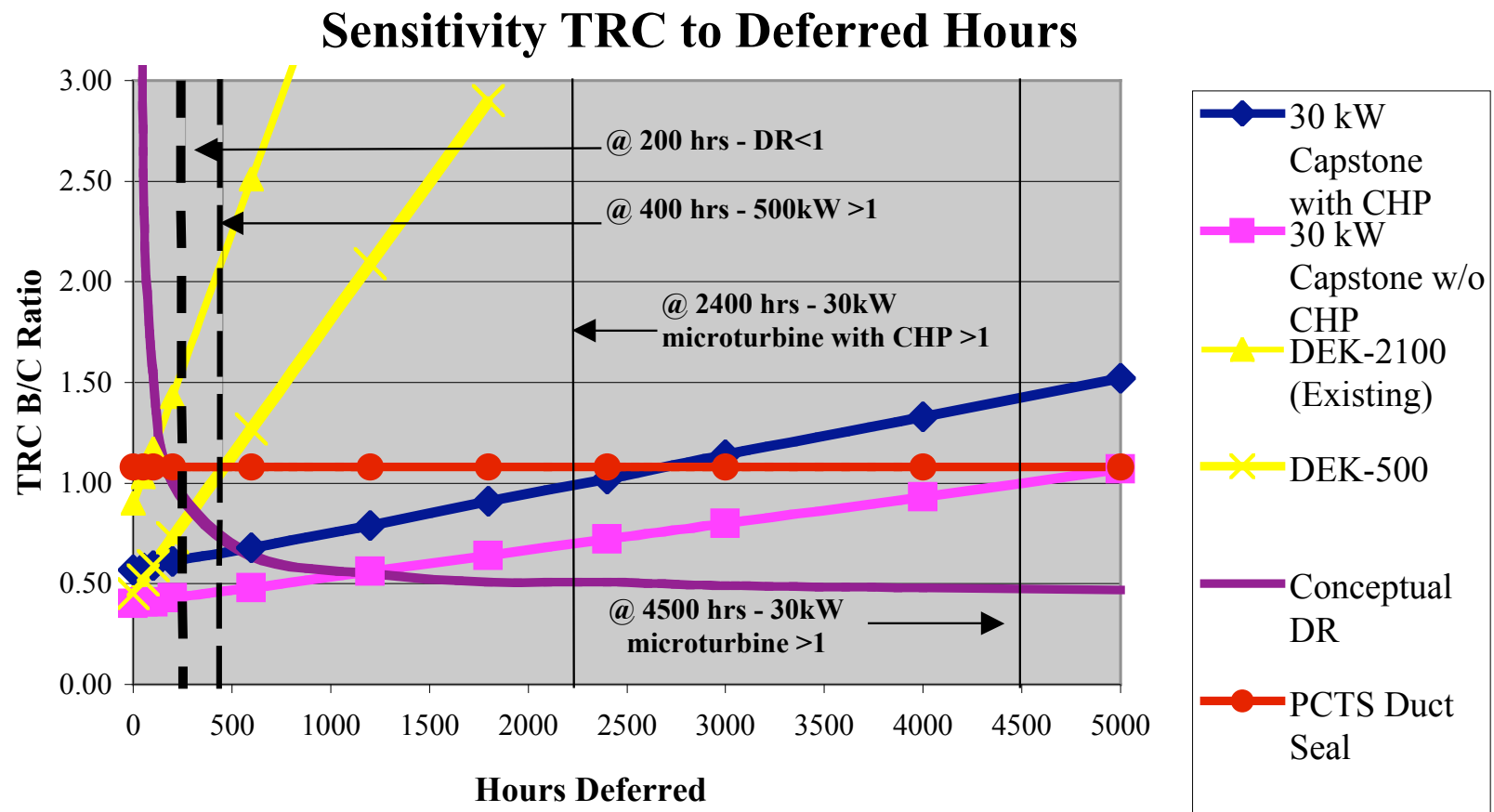
Olympic Peninsula Bottom Line

- Demand response sufficiently close to B/C Ratio of 1 to continue pilot program.
- Opportunity to test portfolio approach:
 - DG, EE, DR, DLC
 - Cost share still an issue
- Energy Efficiency resource and peak impacts data needs improvement.
 - Issue not exclusive to Olympic Peninsula

Lower Valley Analysis

- **Construction Project**
 - *5 phases over 12 years*
 - *Total cost ~ \$55.6 million*
 - *Part of 1st project must be built (pole upgrade)*
- **Looked at 3 options:**
 - *3-yr deferral - partial construction of 1st project*
 - *10-yr deferral - partial construction*
 - *Build first 2 phases then defer further construction*
 - *Full construction of 1st and 2nd Phases at a cost of \$8.5 million*
 - *Deferral of all remaining phases until at least 2019*
 - *Gas pipeline integral to scheme*

Resource Use Hours vs. B/C



More hours DG is dispatched the more cost effective it is.
The fewer hours DR is used the more cost effective it is.

LV Preferred Option

- **Deferred Loads Grow:**
 - 2011-12: 4 MWs, 6 hours
 - 2017-18: 28 MWs, 126 hours
- **Avoided Cost:**
 - 10 Year Deferral: \$219.95/kW
 - First case, 3 Year Deferral: \$51.81/kW
- **Cost Difference:**
 - Built 1st Phases, gain 19 MW system capacity for \$8 million
 - Avoid building remaining phases @ cost of \$47 million
- **Natural Gas Pipeline by 2005-06 makes for 200 MW equivalent new energy options**

LV Findings

Findings	Cost-Effective (TRC)	Annual MW	What We Can Get in 10 Years
DG Internal-combustion	Yes >50-500 hrs*	Unk	Unk
DG	Yes >2400-8000hrs	3 MW	30 MW
Demand Response	Yes** <200 hrs	Up to 7 MW	7 MW or more
Direct Load Control	Yes	Unk	Unk
Energy Efficiency	12 out of 51	1.5	10 MW
Renewables	Yes >4500 hrs	Unk	Unk
Total		11.5	47 MW

* Limited by emissions

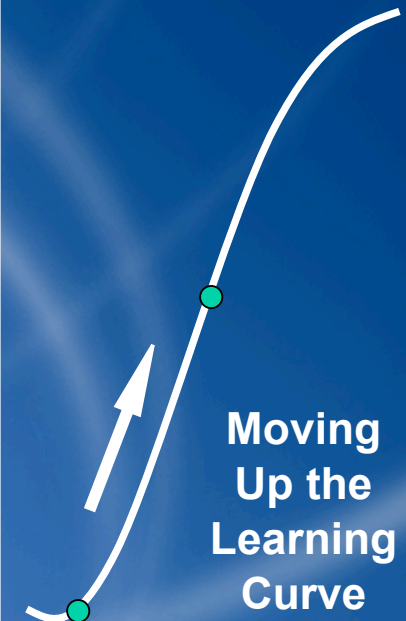
** Less attractive more hours dispatched. Estimates of savings maybe low.

Lower Valley Preferred Option

- **Build 1st two phases then defer until at least 2019**
- **High probability for successful implementation of preferred option provided:**
 - **Utilities & BPA complete “Local Integrated Resource Plan” to confirm full range of resources**
 - **Gas pipeline is constructed creating opportunities for:**
 - **fuel diversity**
 - **combined heat & power (CHP) efficiency**

Learning Curve

Learning Aspect	O.P.	L.V.
Conceptual Understanding	Medium	High
Data (Fcst., demo., finance)	Low	Medium
Screening Tool Use	Very Low	Low



Where are we (EE &TBL) as a learning organization?

Where from here?

- **Olympic Peninsula:**
 - Pilots - DLC, Demx, etc.
 - Energy efficiency peak shave potential
- **Lower Valley:**
 - Potential Pilots
 - Reassess gas issue
 - Energy efficiency peak shaving potential
 - Local integrated resource plan
- **Non-Construction Alternatives Analysis**
 - Redesign tool - awkward, parametrics,
 - Improve energy efficiency analytical method
 - Build supply curve estimates?